(No Model.)

2 Sheets—Sheet 1.

S. R. HAMILTON.

EXTENSION STEP.

No. 582,056. Patented May 4, 1897.

Fig. 1.

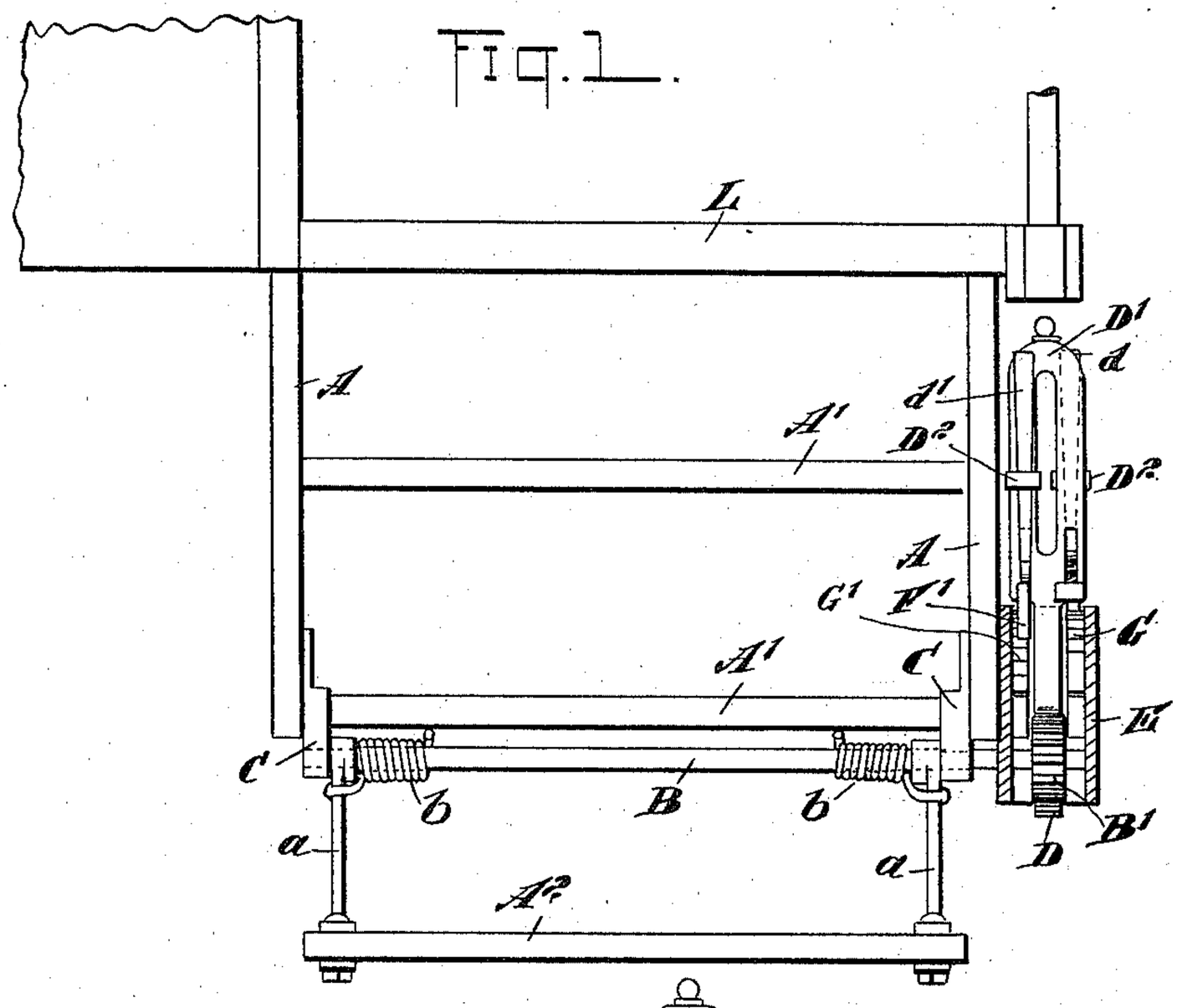
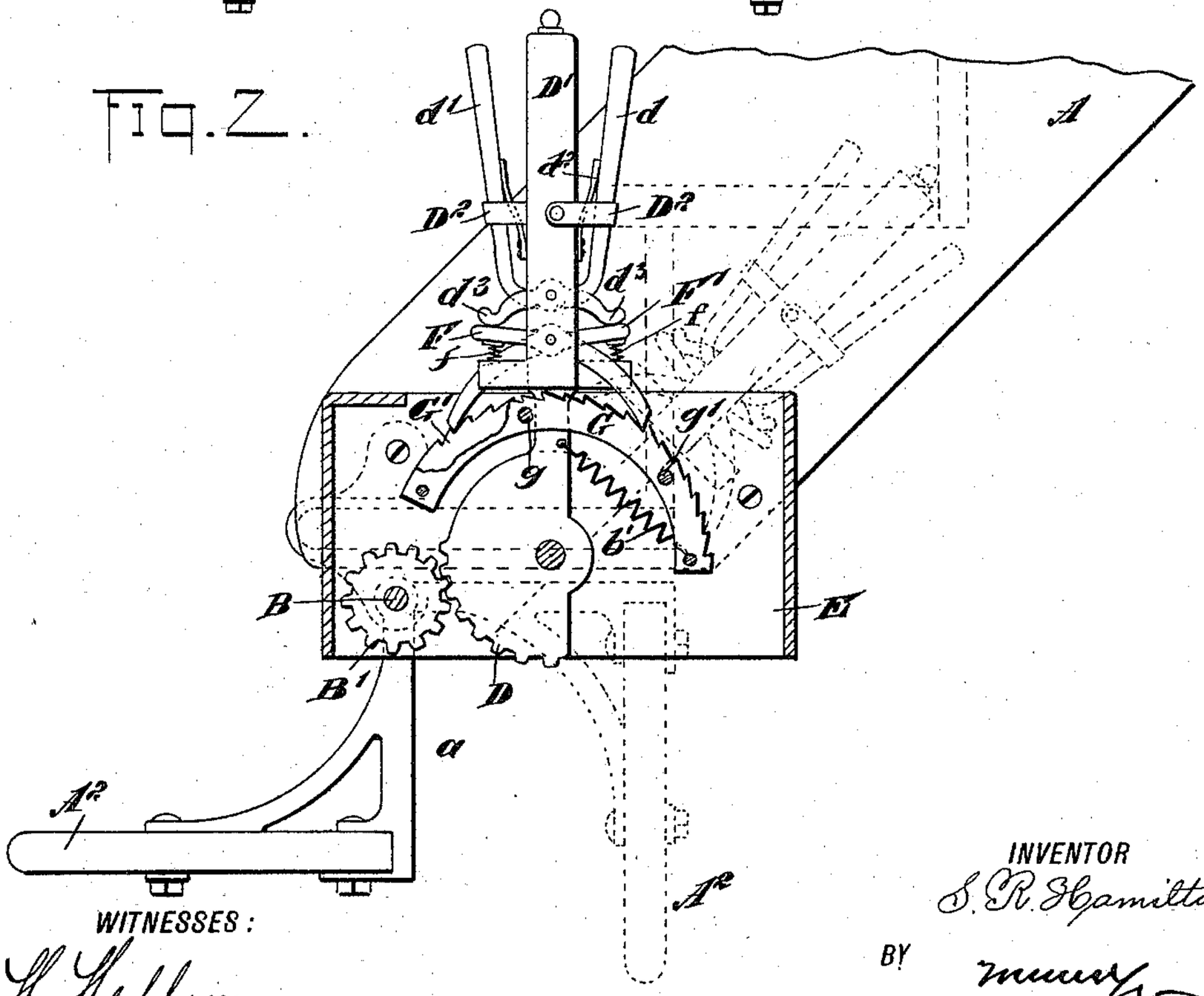


Fig. 2.



WITNESSES:

H. Hellyer.

H. L. Reynolds.

INVENTOR

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BY Munn & Co

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

S. R. HAMILTON.

EXTENSION STEP.

No. 582,056. Patented May 4, 1897.

Fig. 3.

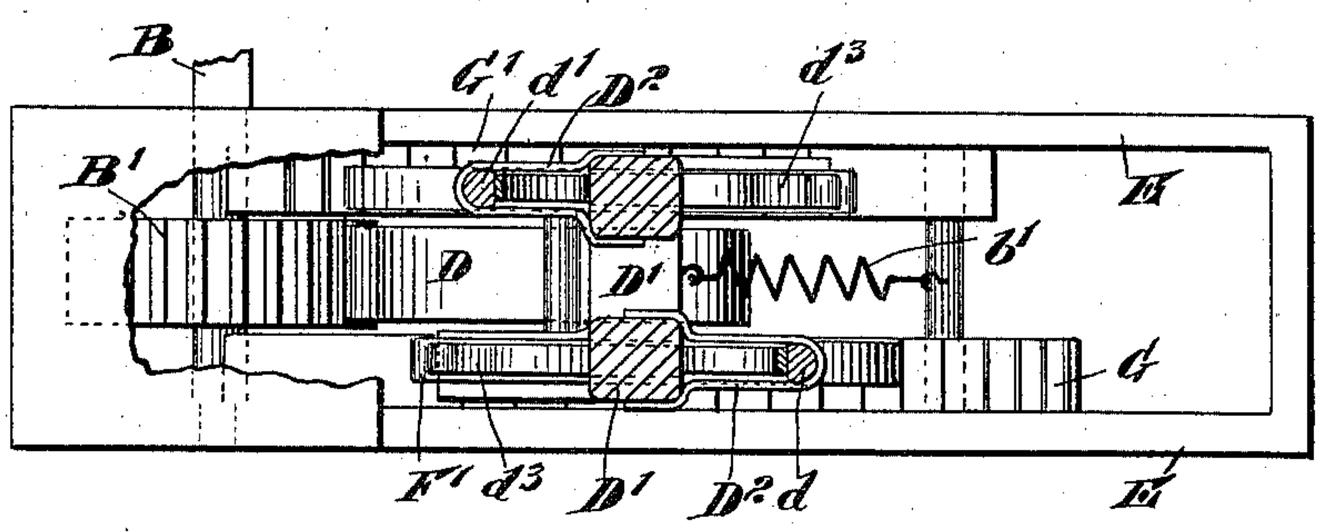
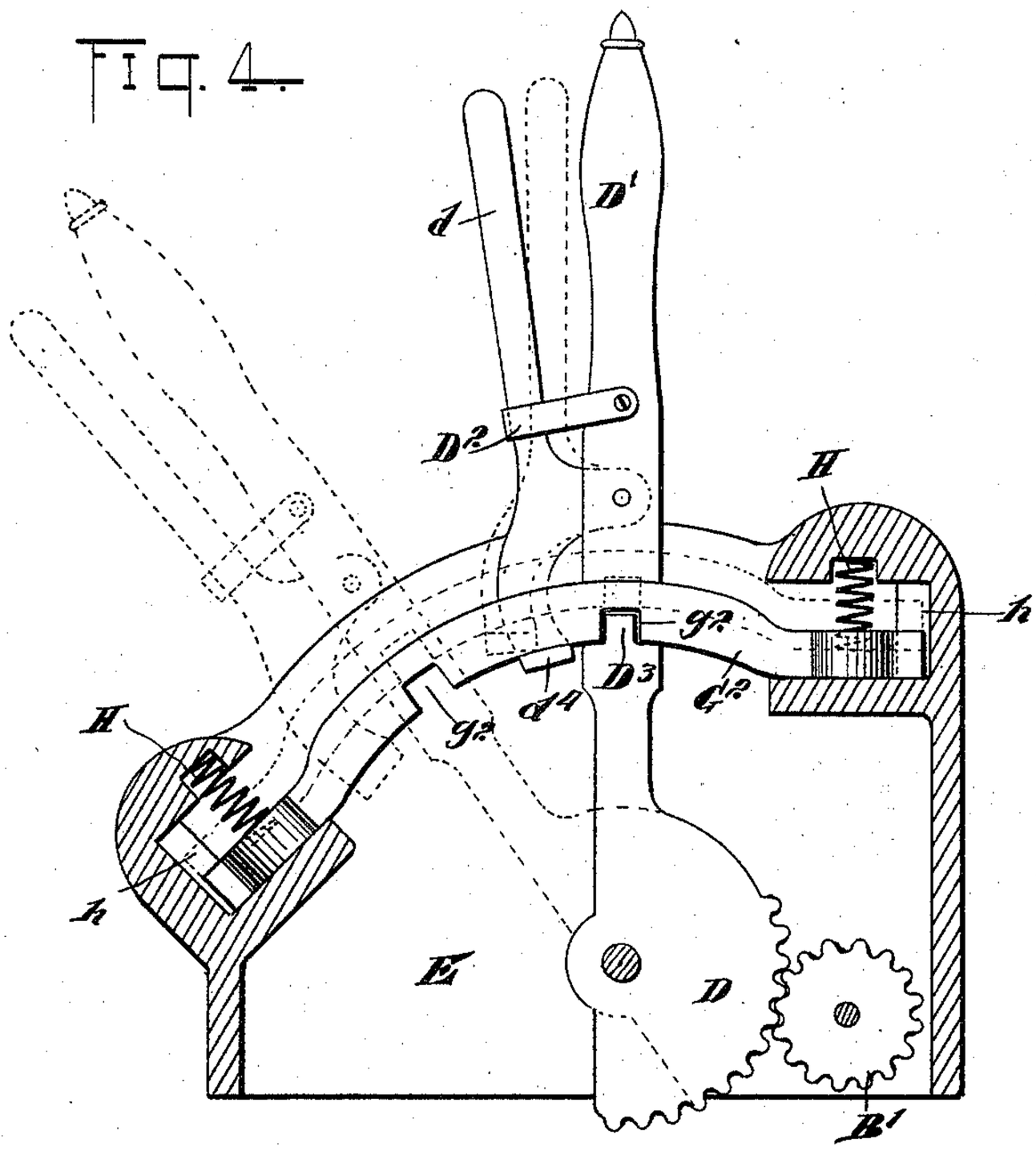


Fig. 4.



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UNITED STATES PATENT OFFICE.

SAMUEL R. HAMILTON, OF FARMERSVILLE, TEXAS.

EXTENSION-STEP.

SPECIFICATION forming part of Letters Patent No. 582,056, dated May 4, 1897.

Application filed November 14, 1896. Serial No. 612,077. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. HAMILTON, of Farmersville, in the county of Collin and State of Texas, have invented a new and Improved Extension-Step, of which the following is a full, clear, and exact description.

My invention relates to improvements in extension-steps which are adapted to be attached to the ordinary steps of cars or other vehicles, and thus make it possible to entirely do away with the boxes used to assist in getting up to the first or lower step.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is an elevation of my device as applied to a car-step. Fig. 2 is an end elevation of the same, the inclosing casing being shown in section. Fig. 3 is a plan view, partially in section; and Fig. 4 is an end elevation of a modified form, partially in section.

The object of my invention is to produce a step which may be folded beneath the ordinary steps when not in use and which when desired may be swung outward, so as to form an additional step between the lower step as ordinarily built and the ground or depot-platform.

In the drawings, L represents the platform of the car or carriage, A the side bars of the steps, and A′ the steps themselves. To the lower end of the steps are fastened two lugs C, which form journals for the shaft B, upon which the extension-step pivots. To this shaft at each end are fixed the arms or brackets *a*, which support the extension-step A^2, and one outer end of the shaft B has attached thereto a small gear-wheel B′. To the outer surface of one of the side bars A of the fixed step is fixed the casing E, which incloses the operating mechanism of my device, and the gear-wheel B′ upon the shaft B lies within said casing.

A segment-gear D meshes with the gear-wheel B′ and is pivoted in the casing E, a lever D′ being attached to or formed as a part of the segment and extending upward and outside of the casing. To each side of the casing and concentric with the pivot of the segment D are fixed two ratchet-bars G and G′, having their ratchet-teeth oppositely cut. These ratchet-bars G G′ have pins *g* and *g′* extending across the space between them and acting as stops to limit the motion of the lever D′ in opposite directions.

The upper end of the lever D′ after clearing the ratchet-bars is forked so as to form separate members, as clearly shown in Fig. 1, and to each of these members is pivoted one of the ratchet-dogs F and F′, engaging their respective ratchet-bars. These dogs are held in engagement by spiral springs *f*, placed between one end of the dog and a projection upon the lever. Pivoted just above these ratchet-dogs are the catch-levers *d* and *d′*, having their opposite ends d^3 engaging the ends of the ratchet-dogs F and F′. These catch-levers are held away from the lever D′ by means of springs d^2, and are restrained by loops D^2, attached to the lever D′. Each of the branches of the lever D′ is thus provided with a catch-lever and a ratchet-dog, and one of these dogs engages the bar G and the other the bar G′.

The position of the step shown in solid lines in Fig. 2 is the operative position. When it is desired to throw the same out of use, the catch-lever *d* is operated to raise the dog or pawl F and the lever D′ is forced back to the position shown in dotted lines. This, through the intervention of the segment-gear D and the gear-wheel B′, rotates the shaft B and swings the step back to the position shown in dotted lines. When it is desired to bring forward the step from the inoperative position, the other catch-lever is operated to release the dog F′ from the ratchet-bar G′ and the lever is swung to the position shown in solid lines in Fig. 2.

The swinging of the step to the inoperative position or that shown in dotted lines may be accomplished by attaching a spring to the device in such a way that when the dog F is released the device will swing back of its own accord. One manner of attaching this spring is shown in Fig. 2, where a spiral spring *b′* is attached to the casing and to the lever D′. Another form of attaching this spring is shown in Fig. 1, in which spiral springs *b* surround the shaft B and engage the bracket A and the step A′.

In Fig. 4 a preferred form of operating device is shown. The step-support and the

gears B′ and B are the same as those just described. Instead of ratchet-bars of the form described I have, however, substituted a bar G^2, which is provided upon its under surface with two notches g^2. These are placed in the positions corresponding to the two positions of the step. This ratchet-bar is mounted in chambers h in the casing, which will permit of a limited amount of motion away from the pivot of the lever D′.

Spiral springs H are placed in contact with the outer surface of the bar, so as to return the same after it has been moved outward. A catch-lever d is pivoted to the main lever, as previously described. The lower end of this lever differs, however, from the other lever. It has an end d^4, which is bent to one side and passes beneath the bar G^2. When the catch-lever d is swung toward the main lever, by grasping the same in the hand the end d^4 will lift the ratchet-bar G^2 and thus free it from the pin or projection D^3 upon this side of the main lever D′, and thus permit the lever to be swung from one position to the other. When the catch-lever d is released, the springs H will return the bar to its normal position, thus engaging the pin or projection D^3 with one of the notches g^2 in the bar G^2.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An extension-step for cars, comprising a shaft pivoted beneath the lowermost of the fixed steps, a pair of L-shaped brackets pivoted at the outer end of one arm to said shaft, a step fixed to the other arm, a spring attached thereto and adapted to swing the pivoted step back under the fixed steps, and to hold the pivoted step vertical, and means for swinging the pivoted step forward and locking it in a horizontal position, substantially as described.

2. An extension-step for cars, comprising a shaft pivoted beneath the lowermost of the fixed steps, a pair of L-shaped brackets pivoted at the outer end of one arm to said shaft, a step fixed to the other arm, a lever attached to the said shaft and having double handles, and a catch-lever and dog for each handle, and two oppositely-toothed fixed segments adapted to be engaged by said dogs, substantially as described.

3. In an extension-step, the combination of a pivoted step, and means for regulating and operating the same, comprising a lever having double handles upon its free end, two oppositely-toothed ratchet-segments, and a catch-lever and a dog pivoted on each division of the operating-lever, said dogs engaging the ratchet-segments, substantially as described.

4. An extension-step for cars comprising a shaft pivoted beneath the lowermost of the fixed steps, a pair of L-shaped brackets pivoted at the outer end of one arm to said shaft, a step fixed to the other arm, a spring adapted to swing the pivoted step back under the fixed steps and to hold the same vertical, and means for swinging the pivoted step forward and for locking it in a horizontal position, substantially as shown and described.

SAMUEL R. HAMILTON.

Witnesses:
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THOMAS F. LOKEY.